



NATIONAL INTEGRATED SPECIMEN TRANSPORTATION SYSTEM: THE ZIMBABWEAN STORY

18 August 2022

Outline



01

Background
History

02

Operational
Milestones

03

Operational Programme
Management

04

IST Program
Indicators

03

Lessons

Background History

MOHCC has approximately 1,672 health facilities providing ART services and 1,634 providing PMTCT services. Of the 1672 health facilities, only about 130 have a functional diagnostic laboratory

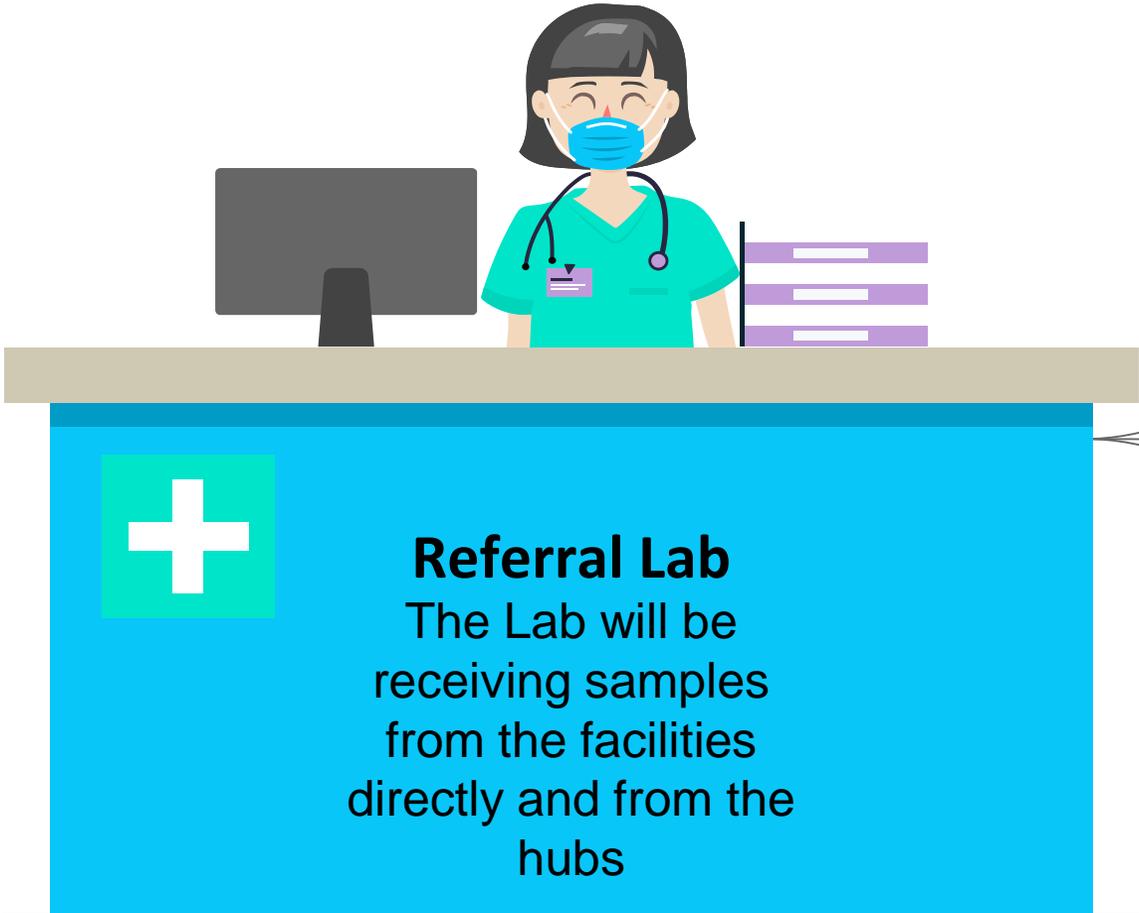
In the yester year, fragmented transportation including patient referral, patients carrying their own samples, EHTs, courier service, partner-initiated models

Overall principle = Undocumented **Hub & Spoke Model** in operation in both funded and unfunded districts in the country

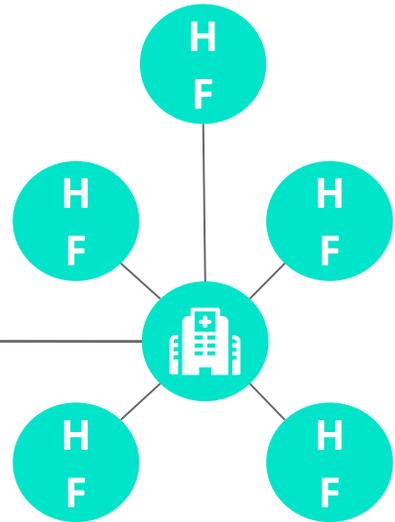
In light of this weakness, the MOHCC and its Stakeholders designed a structured and dedicated HUB & SPOKE IST system which is currently operational



Integrated Specimen transportation-Hub and spoke model



Facility (Spoke) will collect **ALL** samples which will be picked by IST and sent to the District/Mission Hospital lab(Hub)



District Hospital

A district hospital will be sending samples directly to the lab originating from its clinical departments



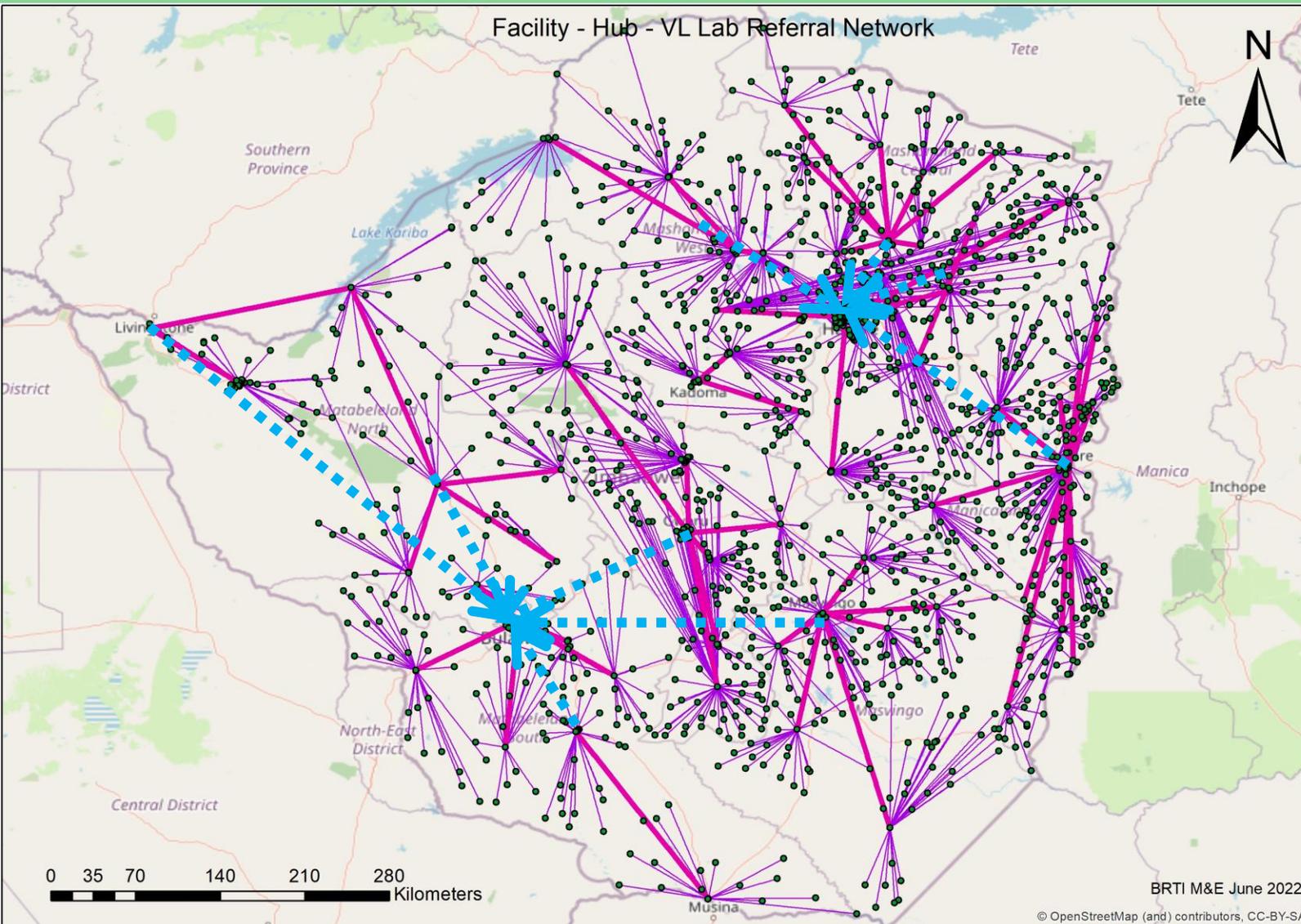
Health Facility

Some facilities send samples directly to the referral lab

In total, 341 clusters were mapped and optimized using mapping software for collection of samples. District, Mission and some Rural Hospitals with labs were defined as hubs. As already described, the hubs are the testing centers for either TB, malaria, EID POC or VL POC. In the original IST concept note, the hub and spoke model with 341 clusters would require 280 motorbikes and 8 vehicles for full saturation and implementation of the system across the country



Network of Facilities to be serviced by IST



Key	Stage
	Facility to Hub: IST Rider
	Hub to VL Lab: IST provincial Vehicle/Rider Relay
	Referral to Tertiary level: Vehicle



IST designed NOT TO LEAVE any specimens behind

Increase in demand for diagnostic testing arising from scale-up of programs including VL, EID, TB, malaria and EDHC
Maximise the use of capacities invested in the robust diagnostic system in an efficient way

IST not leaving any samples behind enables access laboratory testing even without traveling to the laboratory
IST responsible for moving all these samples and returning results to the peripheral facilities

Taking the service to the people, hence equity
Addressing dynamic diagnostic testing including POC and conventional lab testing



Each rural cluster has been planned to be serviced by a rider, **2-3 times every week**. This takes into consideration distances and terrains involved. **Non rider days alternatives are made such as DBS, specimen storage , synchronised collection appointment with riders' days**

In the **urban clusters** where distances are shorter, each cluster will be serviced by a rider **at least 4-5 times per week**.



IST Operational Milestones in Zimbabwe



2017

Consultant recommendation to demonstrate 3 models, 3 districts

Nov 2018

Selection of Hub and Spoke Model and Mapping DNO

May 2019:

STS Follow-up meeting: Kadoma – tools, SOPs, costed plan developed

Sept 2020

IST Concept Note developed.

43%

saturation (120 bikes in 43 districts)

July 2021

Dedicated IST

72%

saturation

(108 PEPFAR-BRTI in 40 districts, 94 Global Fund-BRTI in 23 districts)

Feb 2022

Dedicated IST

92%

saturation

(163 PEPFAR-BRTI in 40 districts, 94 Global Fund-BRTI in 23 districts)

July 2022

Dedicated IST

92%

saturation

8 Global

Fund-

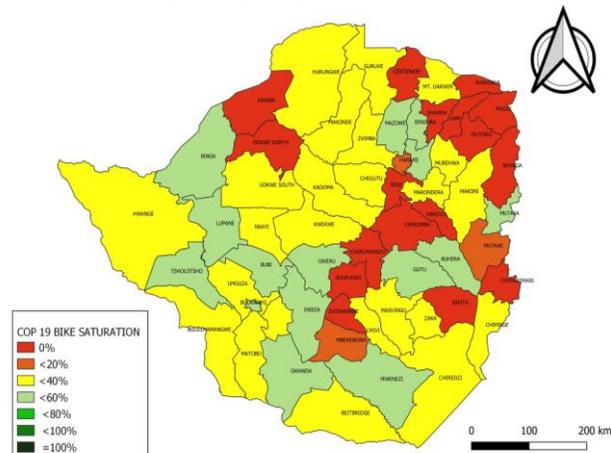
supported

[IST provincial vehicles](#)

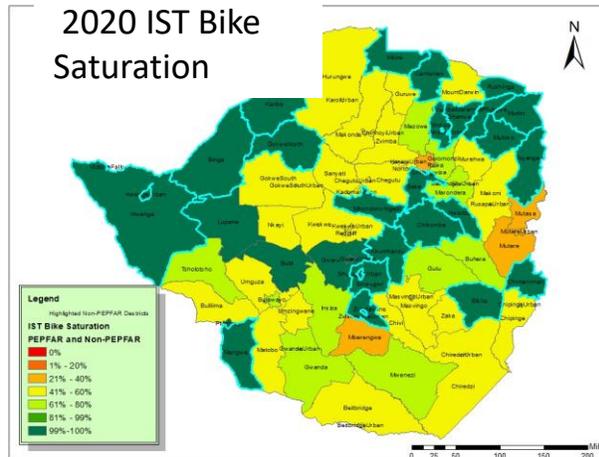
operationalised

National IST Coverage 2021 - 2022

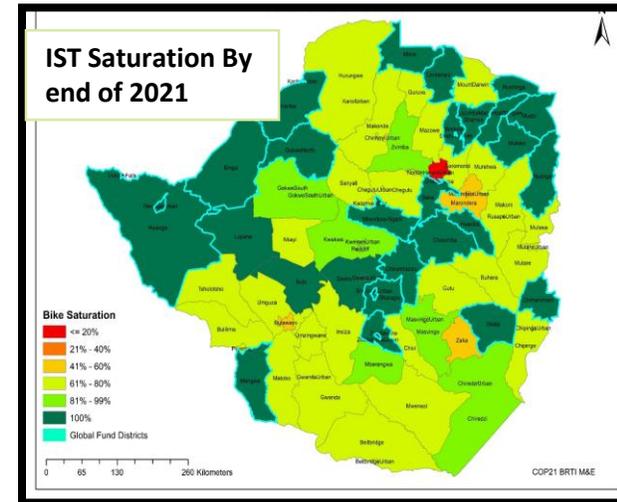
2019 IST Bike Saturation



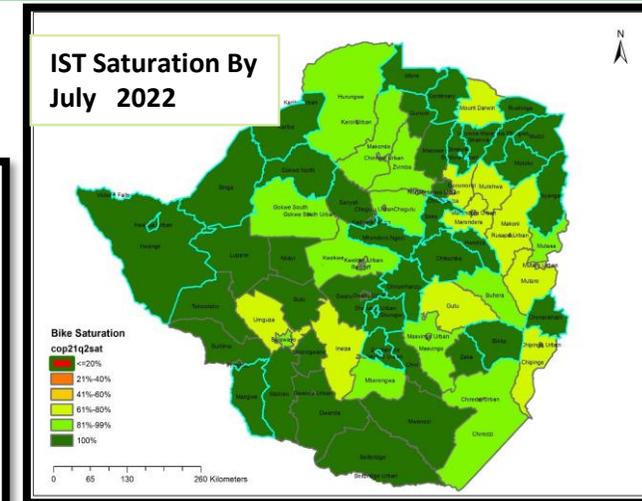
2020 IST Bike Saturation



IST Saturation By end of 2021

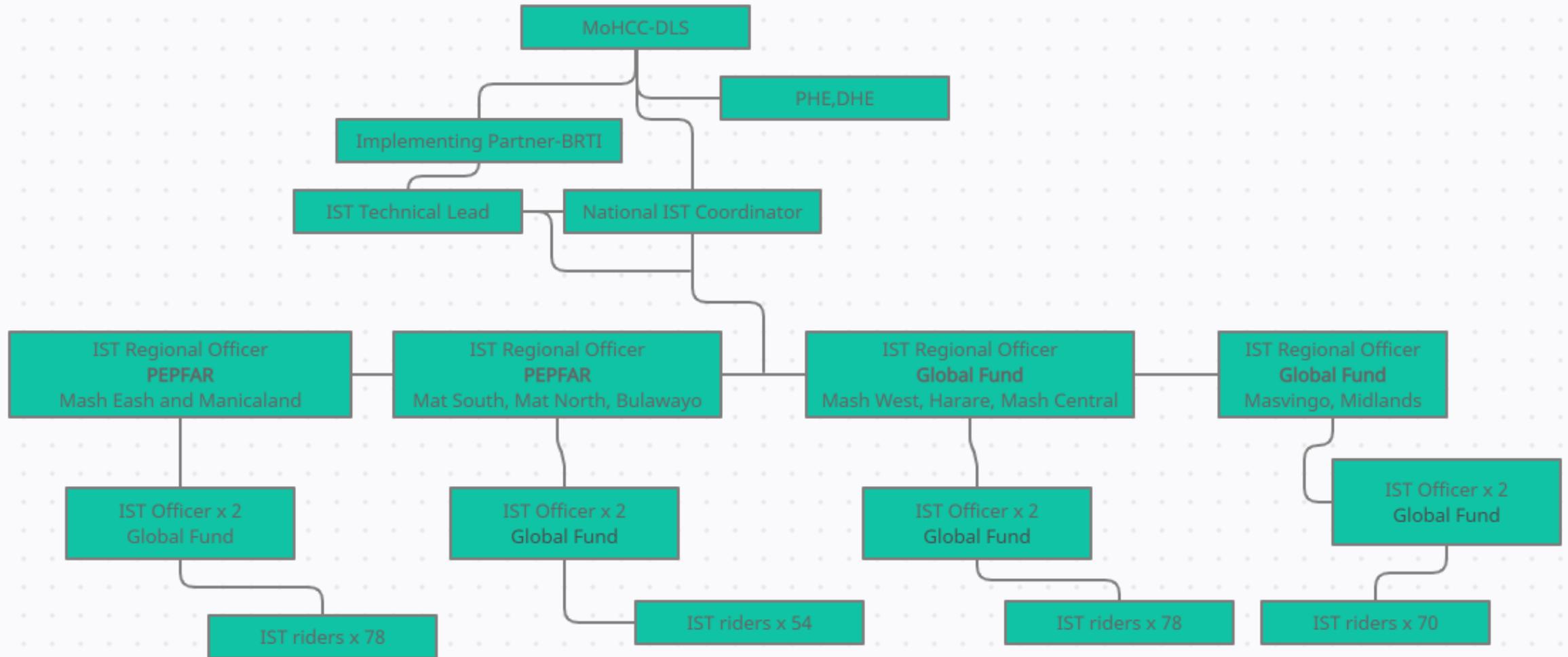


IST Saturation By July 2022



National IST coverage gradually increased over the years

National IST Coordination Organogram





Operational Programme Management

Rider Operational Oversight



Oversight through local IST management at provincial and district level as well as regional officers



Remote Monitoring

Utilizes remote monitoring tools such as Geo tracker to monitor rider movements, ODK logging system and Power BI for analysis and dissemination of data



WhatsApp, Email platforms and Phone calls for communications and resolution of matters



Physical Monitoring

Use of transmittal registers to confirm rider schedule pick up and times

Rider Training and Capacitation



- Triple packaging
- Maintaining specimen integrity - Temperature monitoring
- Biosafety
- Waste management
- Specimen tracking
- Bike maintenance

Initial Orientation and training workshop conducted

Yearly refresher training

Local laboratory has oversight of rider and provides on job training , continuously strengthening Rider's roles as per need

Riders procedural instructions and Job aids in place

Specialized training Government Authority certificate



Route Scheduling


Name of Laboratory: Concession District Hospital Laboratory
Document No. & Title: F130- Rider Route Schedule
Lab Manager: Ms M Maponde, 0772229852
Regional IST Officer: Mr S Nyambi, 0777648867
Provincial IST Officer: Mr R Shumbaicova, 0773506509

Rider Name: Raymond Chabika						
Bike Reg #: AER 1433						
Contact #: 0772553426						
Day	From	To	km	ETA	KM/DAY	KM/WEEK
Monday	CDH	CRANHAM	19	09:20-10:00	126	664km
	CRANHAM	VONABO	37	10:05-11:00		
	VONABO	IRON DUKE	18	11:10-11:35		
	IRON DUKE	MAZOWE CITRUS	12	11:40-12:00		
	MAZOWE CITRUS	STORIS	9	12:10-12:25		
	STORIS	MAZOWE MINE	8	12:30-12:45		
Tuesday	CDH	CRANHAM	19	09:20-10:00	147	664km
	CRANHAM	VONABO	37	10:05-11:00		
	VONABO	IRON DUKE	18	11:10-11:35		
	IRON DUKE	MAZOWE CITRUS	12	11:40-12:00		
	MAZOWE CITRUS	MAZOWE MINE	16	12:10-12:40		
	MAZOWE MINE	BELGOWNIE	11	12:50-13:20		
Wednesday	CDH	CRANHAM	19	09:20-10:00	148	664km
	CRANHAM	VONABO	37	10:05-11:00		
	VONABO	IRON DUKE	18	11:10-11:35		
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	STORIS	BELGOWNIE	19	12:30-13:20		
Thursday	CDH	CRANHAM	19	09:20-10:00	147	664km
	CRANHAM	VONABO	37	10:05-11:00		
	VONABO	IRON DUKE	18	11:10-11:35		
	IRON DUKE	MAZOWE CITRUS	12	11:40-12:00		
	MAZOWE CITRUS	MAZOWE MINE	16	12:10-12:40		
	MAZOWE MINE	BELGOWNIE	11	12:50-13:20		
Friday	CDH	BINDURA	48	REFUELLING	96	664km
	BINDURA	CDH	48			

Rider daily supervision by Lab managers

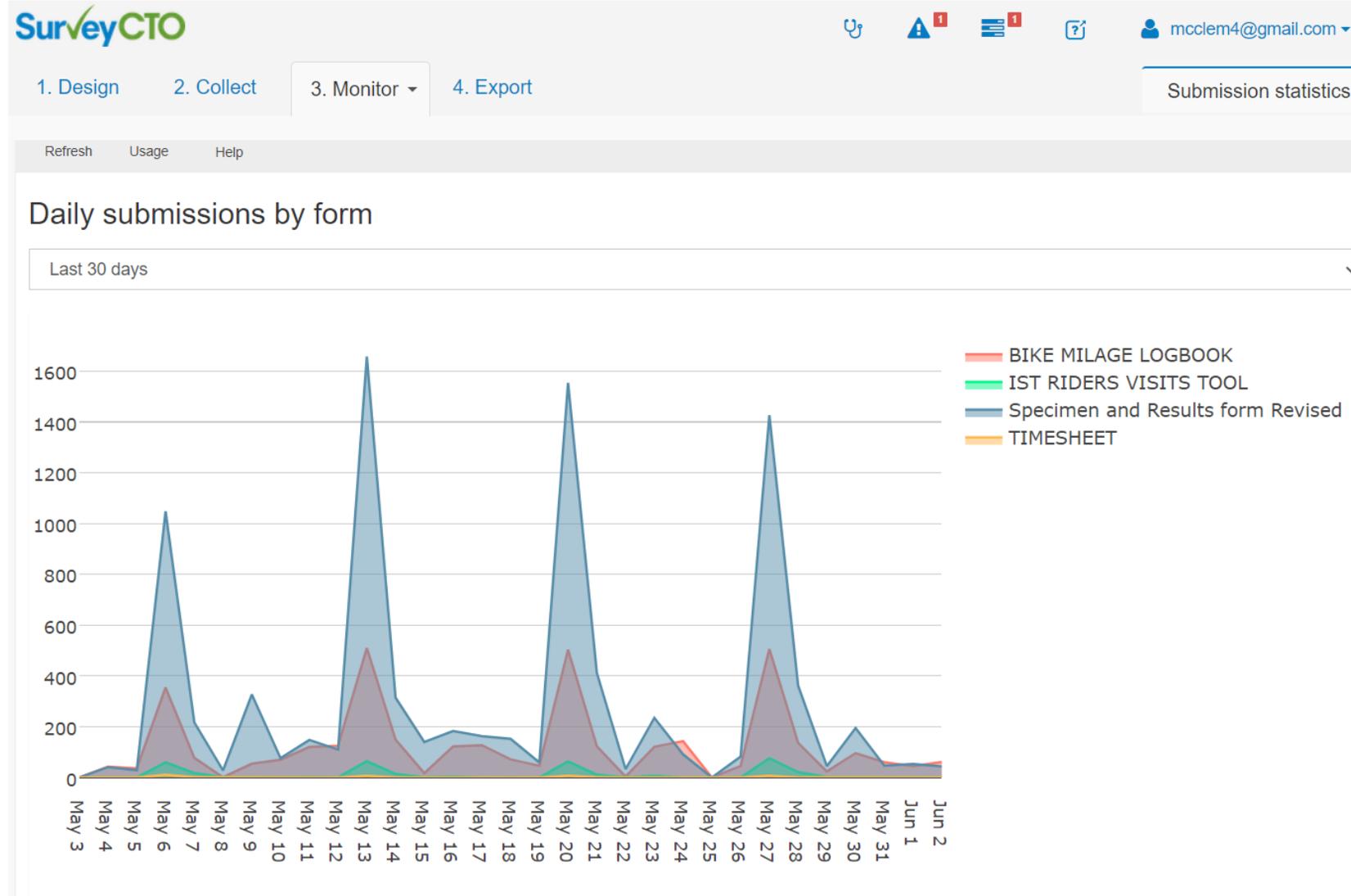
Route schedule preparation and execution

IRON DUKE	MAZOWE CITRUS	12	11:40-12:00	147
MAZOWE CITRUS	STORIS	9	12:10-12:25	
STORIS	BELGOWNIE	19	12:30-13:20	
BELGOWNIE	CDH	34	13:30-14:30	
CDH	CRANHAM	19	09:20-10:00	
CRANHAM	VONABO	37	10:05-11:00	
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MAZOWE CITRUS	MAZOWE MINE	16	12:10-12:40	
MAZOWE MINE	BELGOWNIE	11	12:50-13:20	
BELGOWNIE	CDH	34	13:30-14:30	
CDH	BINDURA	48	REFUELLING	
BINDURA	CDH	48		

Route schedules shared with all stakeholders in rider catchment

Continuous rider training to improve operations (triple packaging, safety, specimen pick up and drop off, transmittal registers etc)

DATA COLLECTION IN IST



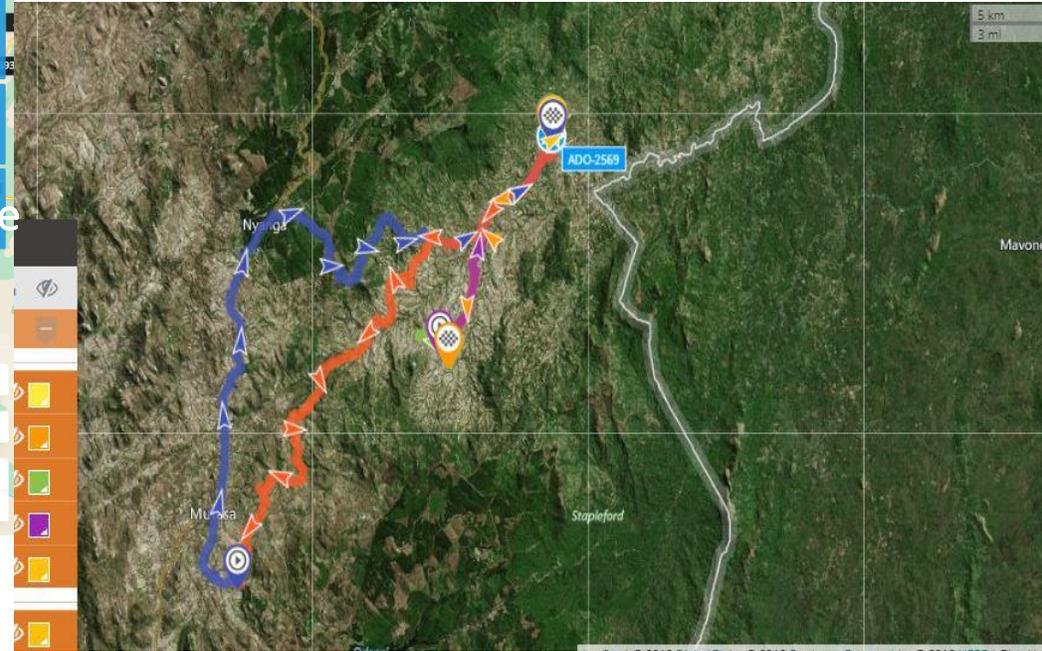
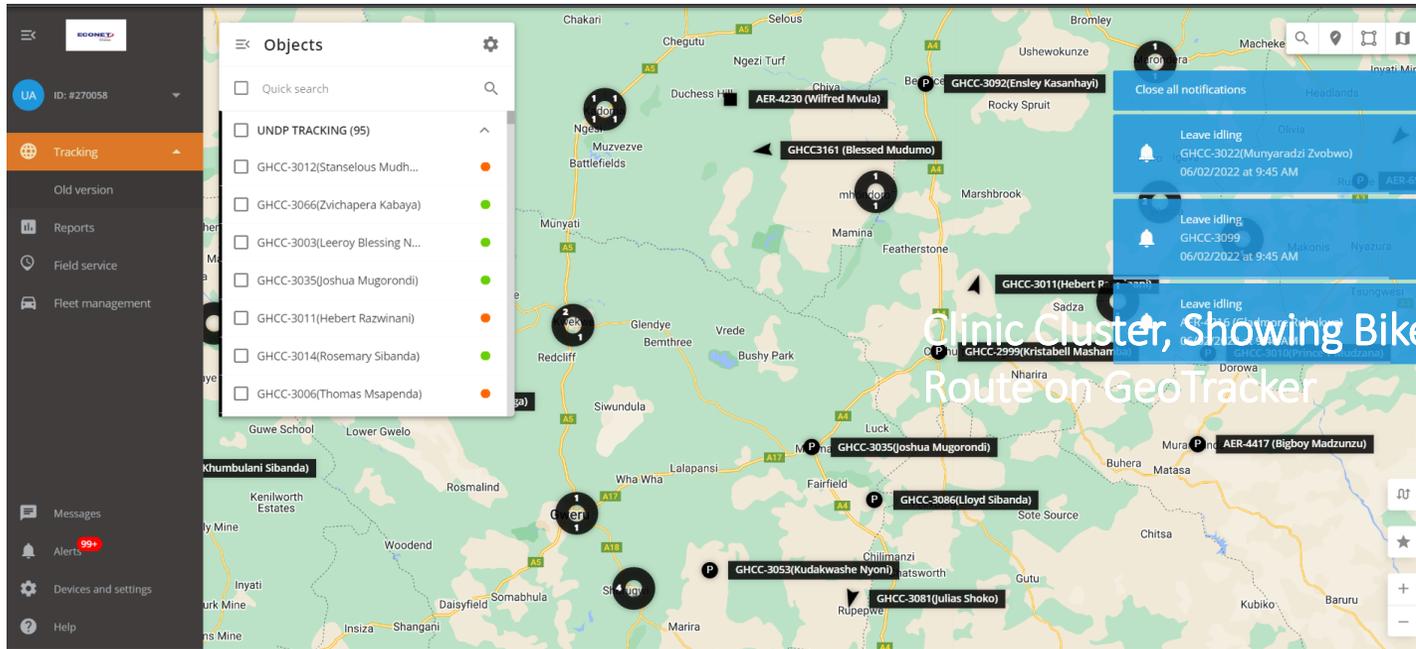
Riders also enter the facilities they visit daily in ODK together with information on the samples they have collected and results distributed disaggregated by sample type.

This information is downloaded on a weekly basis and is used in formulating a weekly report.

GPS Satellite Tracker



- Bikes have satellite trackers installed which enable the monitoring of rider behavior and location at any point in time.



Bike Fuel Management, Lessons Learnt



Fuel is issued to each rider or driver according to distances involved within their route schedules

Mini depots

Fuel orders done on a monthly basis through Regional IST officers for their respective regions following acquittals with supporting documentation

Fuel is issued to riders/ vehicles on a weekly basis

Buffer stocks available in case of emergency

Dead mileage for fueling

Missed pick-ups resulting from fueling commitments

Containerized fuel and associated risks

Triangulated reconciliation (ODK distance vs fuel ordered)

Bike Service & Maintenance

Service based on mileage covered by bike or vehicle from scheduled routes

These known distances are considered in planning and scheduling service ahead of time

Only registered service providers are engaged to ensure that bikes are serviced by competent personnel

Minor, Major service and Repairs done as scheduled and per rising need

IST Programme Monitoring & Evaluation

IST Programme Indicators

Target

Coverage

a Proportion of patient specimens transported this month from health facilities to hub laboratories disaggregated by specimen type.

90%

b Proportion of patient specimens transported this month from the hub laboratories and health facilities to the referral testing laboratory disaggregated by specimen type.

90%

c Proportion of health facilities visited by IST rider for the purpose of specimen collection this month

100%

Bike Functionality

a Proportion of functional motorbikes this month

90%

Specimen Quality and Integrity

a Number of specimens rejected at the hub this month

1%

b Number of specimens rejected at the referral lab this month

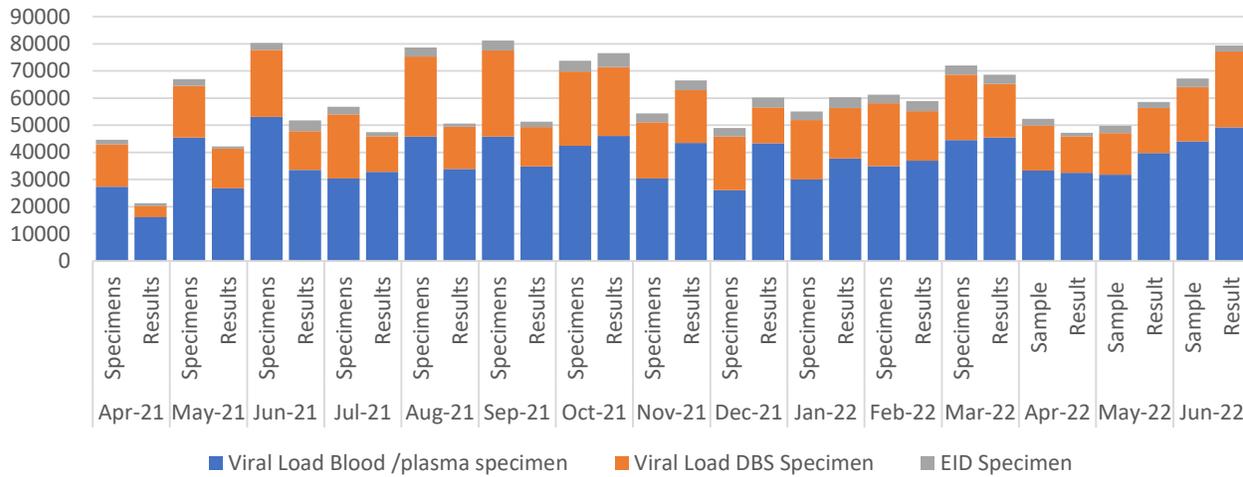
1%



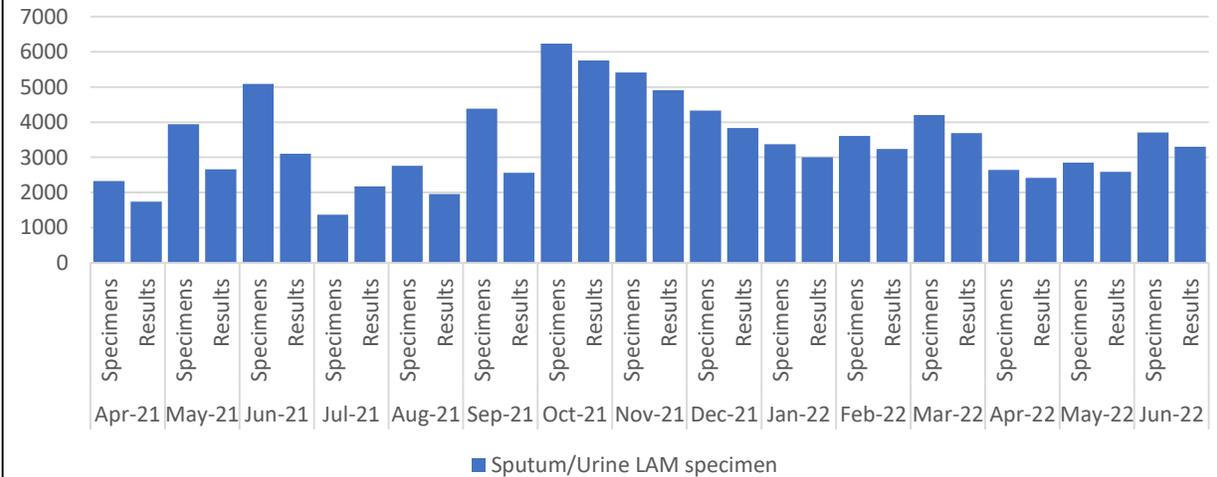
Specimen & Results Transported by IST



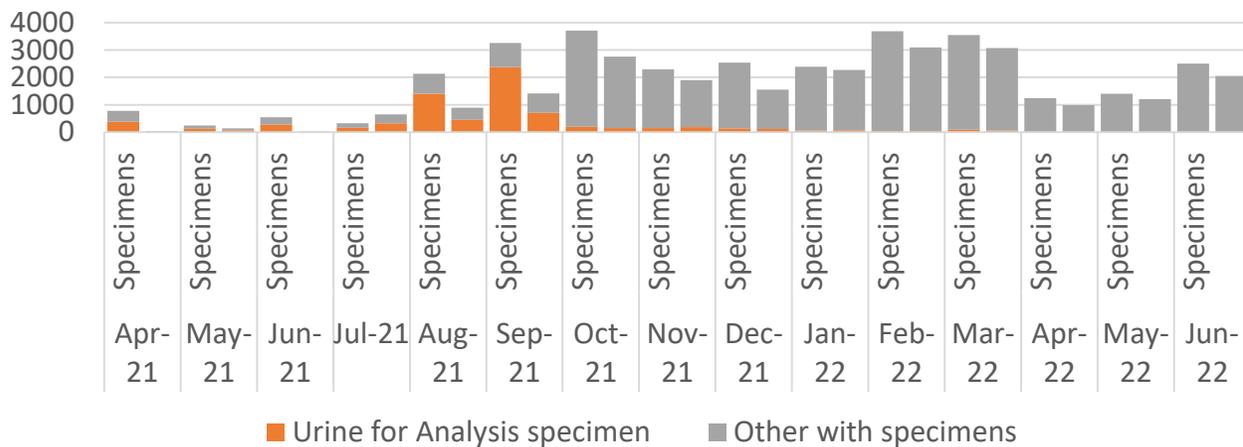
VL-EID Sample Transported



Sputum/Urine LAM specimen



Other Samples Transported



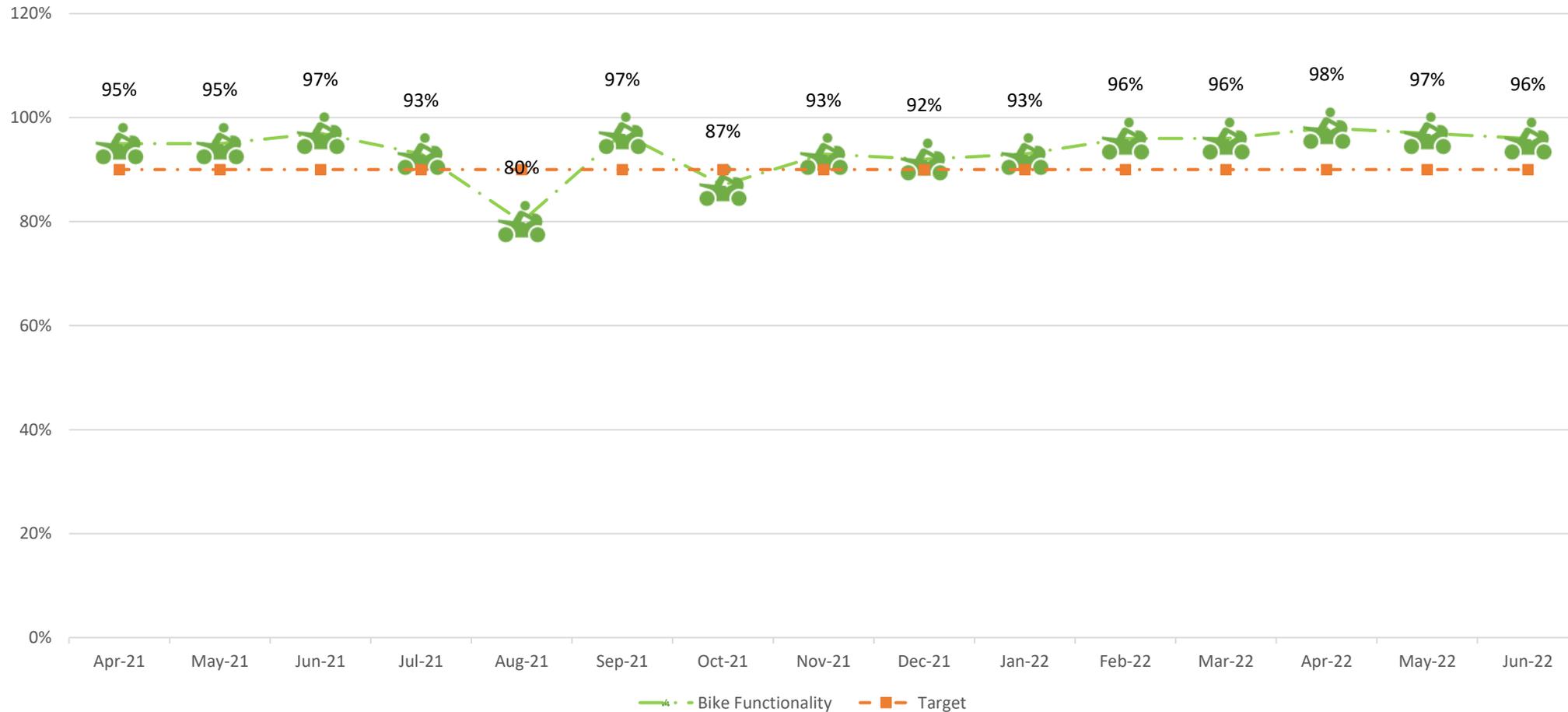
IST has been consistently transporting VL-EID, TB and Other specimens as shown by the time series analysis.

- Other specimens include Malaria, FBC, CD4, Stool and Covid-19 samples
- Routine specimen transportation is also based on demand and availability of local testing capacity , eg RDTs, microscopy sites

Motorbike Functionality

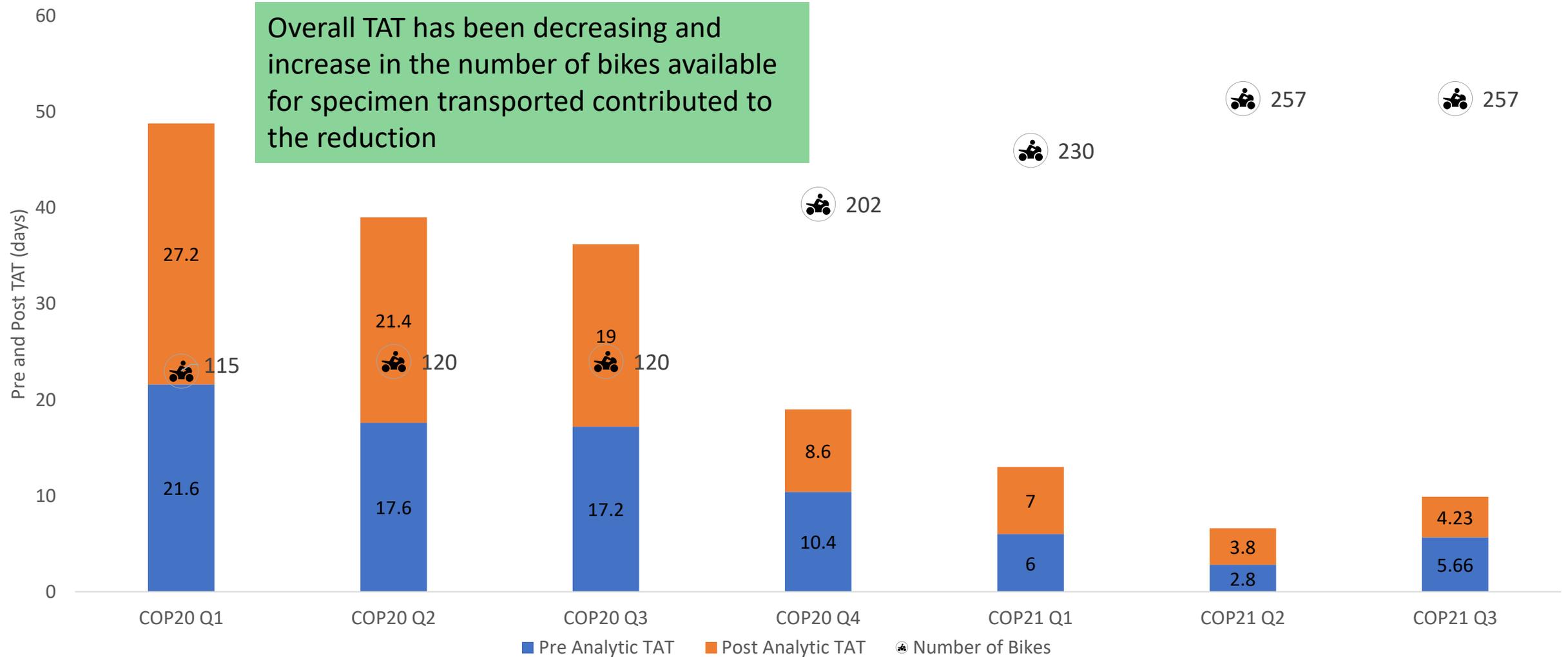


Bike functionality In GF and PEPFAR District :April 2021 to June 2022 Showing overall 92% Bike functionality



Bike functionality has been above 90% target most of the time

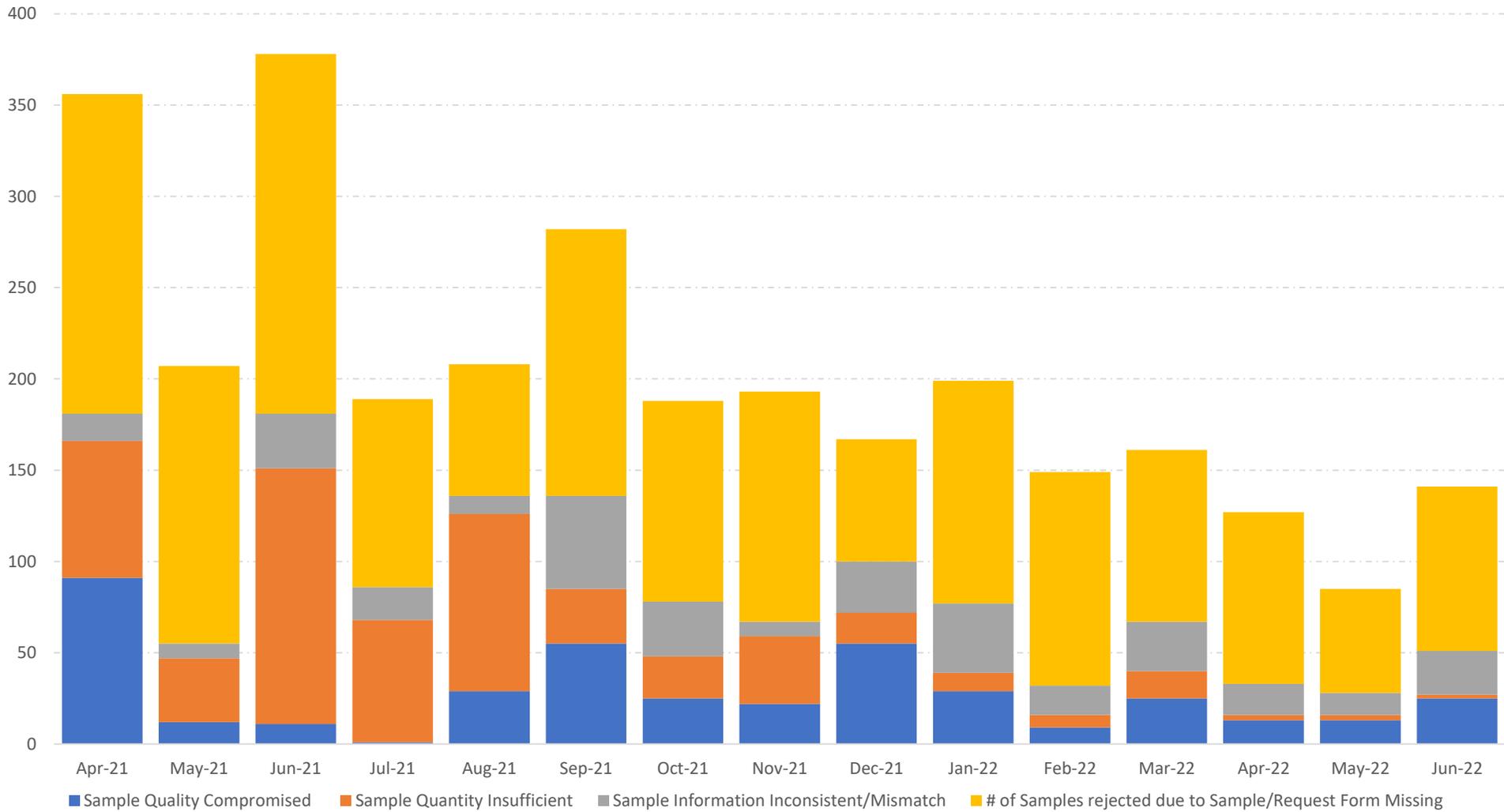
Investments in IST resulting in Improvements in Pre & Post TAT



Rejection Rates between April 2021 and June 2022



Reasons for rejections over time



There has been a gradual decrease in number of rejections over time

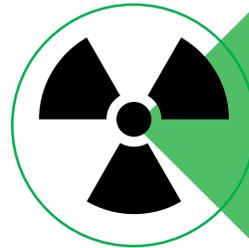
Strengthened CLI where both clinic staff and IST rider verify that every sample has an accompanying form

Clinic staff encouraged not to pre-package specimens to enable effective verification

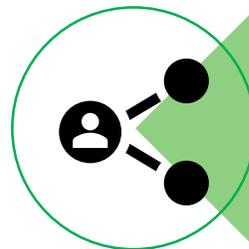
Leveraging on IST Vehicles



IST vehicles freed riders from long relay trips enabling more frequent visits to facilities



They have been instrumental in the movement of waste from facilities and labs to disposal sites

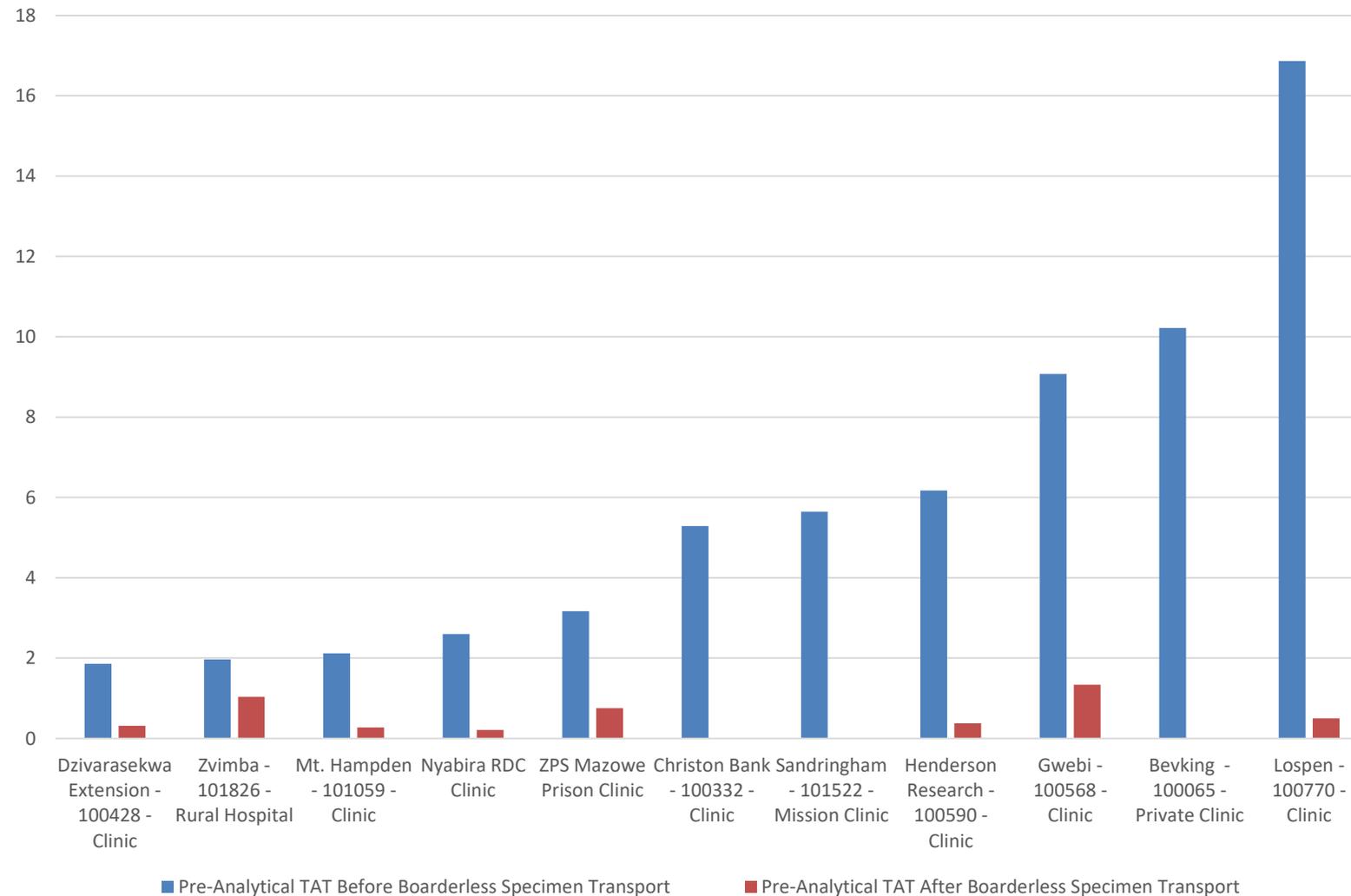


They are bringing efficiencies in the movement of loaned reagents and specimens referred between labs



Implementation of borderless IST

Pre-Analytical TAT showing decrease, with some facility having less than a day TAT



Implementation of borderless IST

Ongoing and being made easier as IST saturation increases.

- Riders' schedules being revised to go beyond district borders where applicable considering distances to:
 - Reduce rider distances
 - Improve pre- and post-analytic TAT
 - Reduce operational costs
 - Operational efficiencies to be realized

Review of route schedules to:

- complement efforts to improve access,
- maximize impact
- generate efficiencies

Tracking Systems

SPECIMEN AND RESULT TRANSMITTAL REGISTER

1st - Facility copy
2nd - Hub copy
3rd - Testing lab copy

000001

Specimen Collection and Transportation Details						Specimen Reception and Result Management Details											
Name of District:		Sending Facility:				Name of District Lab/Hub:			Assigned District/Testing Lab Numbers: From: To:								
Date of Specimen Collection:		Time:		Specimens Collected by:		Name of Testing Laboratory:			Results Management Details								
Date of Pick-up:		Time:		Name of Rider:		Name of Referral Laboratory:											
Patient Name	Sex	Age	OI Number/Unique ID	Specimen Type	Tests Requested	Specimen Accepted at District Lab/Hub Yes (v)/No(x)	Specimen Accepted at Testing Lab Yes (v)/No(x)	Specimen Referred to another Lab Yes (v)/No(x)	Comments	Result Dispatched from Testing Lab Yes (v)/No(x)	Result Collected from Testing Lab Yes (v)/No(x)	Result Received at District Lab/Hub Yes (v)/No(x)	Result Dispatched from District Lab/Hub Yes (v)/No(x)	Results Collected from District Lab/Hub Yes (v)/No(x)	Result Received at Facility Yes (v)/No(x)	Electronic*	Hardcopy
1.																	
2.																	
3.																	
4.																	
5.																	
6.																	
7.																	
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20.																	

Specimens Received at District Lab/Hub	By:	Date:	Time:	Results Dispatched from Testing Lab	By:	Date:	Time:
Specimens Collected from District Lab/Hub to Testing Lab	By:	Date:	Time:	Results Collected from Testing Lab	By:	Date:	Time:
Specimens Received at Testing Lab	By:	Date:	Time:	Results Received at District Lab/Hub	By:	Date:	Time:
Specimens Received at Referral Lab	By:	Date:	Time:	Results Dispatched from District Lab/Hub	By:	Date:	Time:
Data Logger Temperature at District Lab/Hub	Min Temp:	Max Temp:		Results Collected from District Lab/Hub	By:	Date:	Time:
Data Logger Temperature at Testing Lab	Min Temp:	Max Temp:		Results Received at Facility	By:	Date:	Time:

Instructions for use:
 1. Forms should be filled in triplicate (Copy 1 - Facility, Copy 2 - Hub, Copy 3 - Testing Laboratory); copy 1 remains at facility as a record of specimens collected, copies 2 and 3 accompany the specimens to hub and testing laboratory. 2. Specimens tested at hub: copies 2 and 3 accompany results to facility; and both copies are returned to hub after acknowledgement of results receipt at facility.
 3. Specimens tested at the testing laboratory: copy 2 and 3 accompany results to the hub and facility. After acknowledgement of results at the facility, copy 2 must be returned and filed at the hub and copy 3 must be returned and filed at the testing laboratory.
 * Electronic results - results received via sms notification, email, WhatsApp (PDFs) or Electronic Health Records (EHR) systems.

IST ODK

SurveyCTO

1. Design 2. Collect 3. Monitor 4. Export

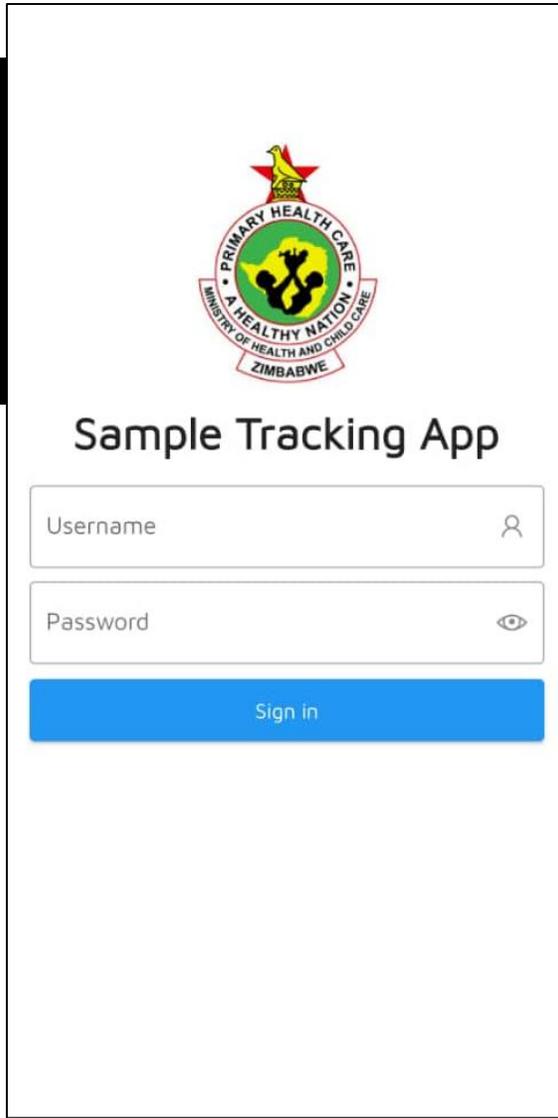
Your data

- BIKE MILAGE LOGBOOK
Form ID: bk20210114, Complete submissions: 46824 (latest May. 13, 2022 at 11:05:30AM)
- Specimen and Results form Revised
Form ID: ist11092020, Complete submissions: 122437 (latest May. 13, 2022 at 11:08:22AM)
- IST RIDERS VISITS TOOL
Form ID: moni20210114, Complete submissions: 5133 (latest May. 13, 2022 at 10:58:53AM)
- TIMESHEET
Form ID: ts20210114, Complete submissions: 908 (latest May. 13, 2022 at 9:31:05AM)
- TEST - Specimen and Results form Practice
Form ID: ist11092021, Complete submissions: 1 (latest Apr. 11, 2022 at 4:18:50PM)

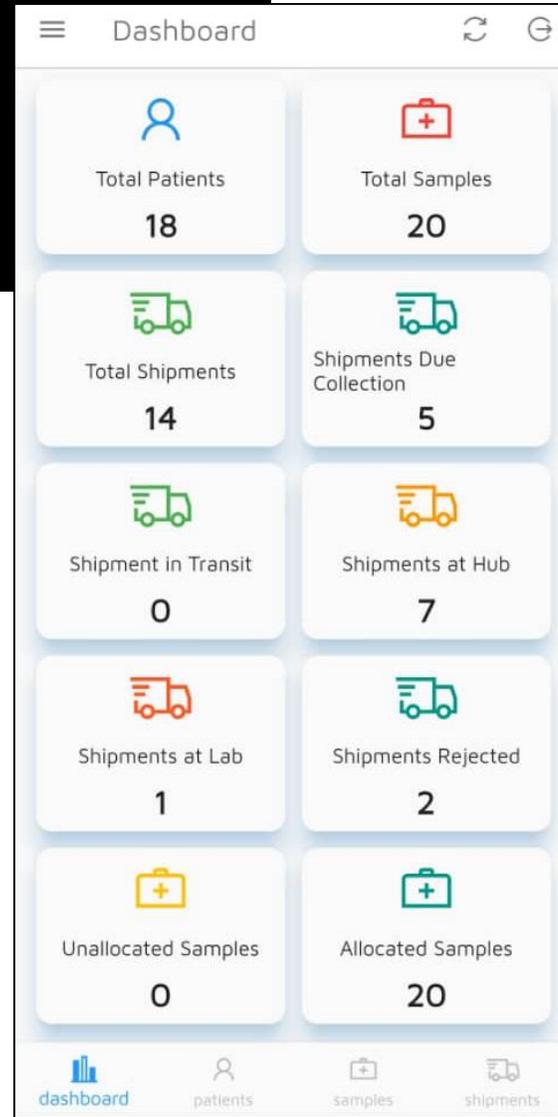
Advanced: publishing form and dataset data to the cloud

FM/M&E/001: Version 2: Mar 2022

Tracking systems cont'd... Electronic Sample Transport system



The login screen for the Sample Tracking App features the logo of the Ministry of Health and Child Care, Zimbabwe. Below the logo, the text 'Sample Tracking App' is displayed. There are two input fields: 'Username' and 'Password', each with a corresponding icon (a person for username and an eye for password). A blue 'Sign in' button is positioned below the password field.



Expected Outcomes

System capability testing and internal reviews ongoing. Pilot by end of June

Transition from tedious and manual monitoring from paper-based transmittal registers

Real time access and monitoring of data allowing specimen movements to be easily tracked at every stage

Cost savings -no need for printing costs associated with hard copies of transmittal registers

Improved program performance monitoring as needed

Challenges/Mitigatory Measures in IST



Challenges	Mitigation
Inclement weather during the rainy season	Raise awareness among riders to assess risks on certain routes affected by inclement weather
Rider accidents	Planning specialized rider training – GA for riders (specialized riding skills, terrain management, night riding, basic motorcycle maintenance)
Non-availability of riders due to sick leave, covid isolation, vacation leave	Recruit dedicated relief riders per district
Day-to-day rider monitoring	Strengthen use of electronic monitoring systems (GPS tracking, ODK system) and physical supervision of riders by district lab personnel and placement of 10 provincial IST coordinators to replace the current 4 regional coordinators

“Every Challenge is a Chance to Become a Champion”



Bad, Rural Roads due to under-development

Bike Breakdowns due to roads with pot-holes increasing maintenance intervals



Flooding of Road Access Points affecting route schedules



Bridges washed away during rainy season

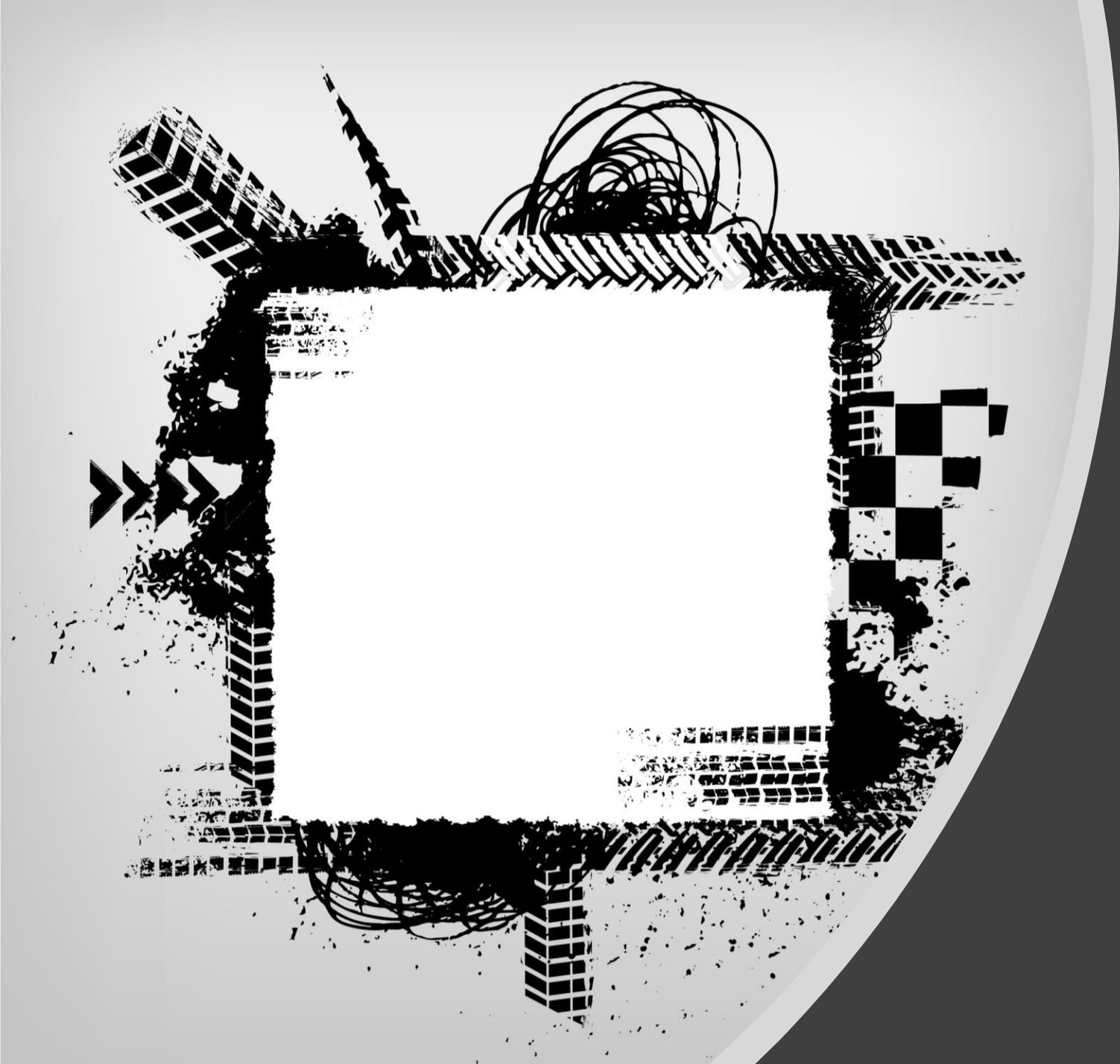
“Every Challenge is a Chance to Become a Champion”

Fuel price hike sparks mayhem - NewsDay Zimbabwe

<https://www.newsday.co.zw/2022/03/fuel-price-hike-sparks-mayhem>

11/03/2022 · The Zimbabwe Energy Regulatory Authority on Wednesday increased fuel prices for the second time in five days, with petrol going up from US\$1,51 per litre to US\$1,67 and diesel...





Thank you